

VAPOR DEPOSITION PROCESS AND APPARATUS THEREFOR

Abstract

A process and apparatus for depositing a ceramic coating on a component. The process involves a technique for evaporating an evaporation source containing multiple different oxide compounds, at least one of the oxide compounds having a vapor pressure that is higher than the remaining oxide compounds, to depositing a coating of the multiple oxide compounds. A high energy beam is projected onto the evaporation source to melt and form a vapor cloud of the oxide compounds of the evaporation source, while preventing the vapor cloud from contacting and condensing on the component during an initial phase in which the relative amount of the one oxide compound in the vapor cloud is greater than its relative amount in the evaporation source. During a subsequent phase in which the relative amount of the one oxide compound in the vapor cloud has decreased to something approximately equal to its relative amount in the evaporation source, the vapor cloud is allowed to contact and condense on the component to form the coating.